20 May
(Date)

TO: JT — H S.

BUILDING | ROOM NO.

REMARKS:

Spec. for Ord. Rubber material

We use Type III, Class B Style 2.

file: Burial Packaging, 1955

FROM: Bill

BUILDING | ROOM NO. | EXTENSION

Declassified and Approved For Release 2012/11/07 : CIA-RDP78-03642A001600020062-4

ZZ-T-416a
13 DECEMBER 1950
SUPERSEDING
Fed. Spec. ZZ-T-416
June 20, 1949

FEDERAL SPECIFICATION

TIRE AND TUBE RECONDITIONING MATERIALS AND EQUIPMENT (RUBBER AND RELATED PRODUCTS)

This specification was approved on the above date by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope.—This specification covers materials, equipment, and related products suitable for the reconditioning of pneumatic tires and inner tubes, as installed on ground vehicles operated by Federal agencies. (See 6.2.)

1.2 Classification.

1.2.1 *Types, classes, and styles.* — Materials, equipment, and related products covered by this specification shall be of the following types, classes, and styles, as specified in the invitation for bids (see 6.1):

Type I.—Tire-repair materials.
- Class A.—Tread-repair stock.
- Class B.—Repair-cushion stock.
- Class C.—Repair-cord stock.

Type II.—Tire-capping materials.
- Class A.—Camelback.
  - Style 1.—Bevel stock.
  - Style 2.—Wing stock.
- Class B.—Padding (filling) stock.
- Class C.—Filler-strip stock.

Type III.—Patches and patch materials.
- Class A.—Tire patches.
- Class B.—Tube-repair materials.
  - Style 1.—Combination-tube-repair gum.
  - Style 2.—Tube-repair gum (vulcanizing).

Type IV.—Processing materials.
- Class A.—Vulcanizing cement.
- Class B.—Cold-process cement.
- Class C.—Technical talcum (soapstone).
- Class D.—Rubber solvent.
- Class E.—Curing-bag paint.
- Class F.—Tire-mold lubricant.
- Class G.—Rubber-marking crayons.
- Class H.—Oil-base soap.

Type V.—Curing equipment.
- Class A.—Curing tubes.
- Class B.—Curing bags.

2. APPLICABLE SPECIFICATIONS

2.1 The following Federal Specifications, of the issues in effect on date of invitation for bids, form a part of this specification:

P-S-598 —Soap, Liquid and Paste; (for) Automobile, Floor and General Cleaning.

VV-L-791 —Lubricants, Liquid Fuels, and Related Products; Methods of Sampling and Testing.

ZZ-C-191 —Cement; Rubber (Artists' and Photographers', and Cold-Patching).

ZZ-R-601 —Rubber Goods; General Specifications (Methods of Physical Tests and Chemical Analyses).

CCC-T-191 —Textiles; General Specifications, Test Methods.

(Copies of Federal specifications and the Federal Specifications Index may be obtained upon application, accompanied by postal note, money order, coupon, or cash, to the Superintendent of Documents, Government Printing Office, Washington 25, D.C. Prices may be obtained from the Superintendent of Documents.)

2.2 Specifications and other publications applicable only to individual departments are listed in section 7.

3. REQUIREMENTS

3.1 Materials.—The materials used in the manufacture of stocks, fabrics, or other items covered by this specification shall be of first quality.

3.1.1 *Definitions.*—As used in this specification, terms for materials or their characteristics shall have the following meanings:

3.1.1.1 *Natural rubber.* — Natural rubber shall include all forms and types of tree, vine, or shrub rubber, but shall not include reclaimed natural rubber.

3.1.1.2 *GR-S synthetic rubber.*—GR-S synthetic rubber shall include a synthetic rubber of the butadiene-styrene type generally used in the manufacture of pneumatic tires and camelback, but shall not include reclaimed synthetic rubber.

3.1.1.3 *GR-I synthetic rubber.*—GR-I synthetic rubber shall include a special-purpose synthetic rubber of the type known as butyl.

3.1.1.4 *Total rubber hydrocarbon (RHC).* —The total rubber hydrocarbon shall include the content of natural rubber, synthetic rubber, reclaimed rubber, uncured scrap rubber, uncured in-process materials, and the rubber-hydrocarbon content of master-batches or compounds of rubber hydrocarbon.

3.1.2 *Backing.*—A backing not less than 0.0035 inch in thickness shall be processed on sheeted stock materials, and camelback. When domestic shipment is required this backing shall be Holland, varnished cambric, flexible waterproof film, or equivalent material. For overseas (export) shipment, the backing shall be flexible waterproof film, varnished cambric, or equivalent material.

3.1.3 *Storage life.* — The materials furnished under this specification shall be capable of giving satisfactory service, with the sheet materials and camelback showing no evidence of sulfur bloom, for 6 months after date of manufacture, provided they have been protected from physical damage and also that the ambient air temperature has not been more than 110° F. during the period of storage.

3.2 Type I, tire-repair materials. — The tire-repair materials shall be of the compound and dimensions shown in table I. The surface of the compound for each material shall be tacky and free from bloom. Each of type I materials shall be capable of developing a satisfactory cure when subjected to the vulcanizing test described in 4.2.1.

3.2.1 *Class A, tread-repair stock.* — The tread-repair stock (gum) shall be suitable for building up treads of sidewalls when making sectional repairs.

3.2.2 *Class B, repair-cushion stock.* — The repair-cushion stock (gum) shall be suitable for filling cord-body skives, facing patches, and lining tread skives.

3.2.3 *Class C, repair-cord stock.*—The repair-cord stock (fabric) shall be made of first-quality rayon, and shall be suitable for building up patch repairs. Weight of the stock (gum and fabric) shall be not less than 1.60 pounds per square yard, and not more than 2.70 pounds per square yard. The weight of the fabric shall be not less than 30 and not more than 60 percent of the total weight per square yard. The breaking strength of the cord, when tested as described in 4.2.2, shall be not less than 500 pounds per inch width of fabric.

TABLE I.—*Type I, tire-repair materials*

Class	Designation	Compound		Dimensions	
		Natural rubber by volume, minimum	Total RHC by volume, minimum	Thickness	Width
		Percent	*Percent*	*Inch*	*Inches*
A	Tread-repair stock	45	60	0.062 ± 0.002	18 to 20
B	Repair-cushion stock	70	70	.031 ± .002	18 to 20
C	Repair-cord stock	70	70	.043 ± .007	24 to 40

3.3 Type II, tire-capping materials.—The tire-capping materials shall be of compound as shown in table II, and shall be suitable for use for top capping or for full capping or retreading. These materials shall develop a satisfactory cure when subjected to the vulcanizing test described in 4.2.1.

3.3.1 *Class A, camelback (grade A).*—The camelback shall be furnished in the style, width, thickness, and applicable tire size as specified (see 6.1), of compound as shown in table II, and shall be faced with cushion gum of not less than 0.020-inch thickness. Appearance of the camelback shall be uniform over its entire surface, and it shall be free from porosity and lumps of cured compound. The grade designation (GR–S) shall be shown along the length of each roll of camelback, at such intervals that it will appear at least once in each portion cut off to cap or tread a tire.

3.3.1.1 *Style 1, bevel stock.* — The bevel-stock camelback shall be suitable for top capping, and shall be tapered on each side, with each tapered portion ¼ inch wide. The dimensions as specified (see 6.1), shall be subject to the following maximum tolerances:

Crown width____plus or minus 1/16 inch.
Base width_____plus or minus 1/16 inch.
Thickness _____plus or minus 1/32 inch.

3.3.1.2 *Style 2, wing stock.* — The wing-stock camelback shall be suitable for full capping or retreading. The dimensions as

TABLE II.—*Type II, tire-capping materials*

Class	Designation	Compound		
		Natural rubber by volume, minimum	New GR-S by volume, minimum	Total RHC by volume, minimum
		Percent	*Percent*	*Percent*
A	Camelback (grade A)	(*)	60.0	65.0
	Camelback cushion	60.0	---	70.0
B	Padding stock	60.0	---	70.0
C	Filler-strip stock	45.0	---	60.0

* None permitted.

specified (see 6.1), shall be subject to the following maximum tolerances:

Crown width____plus or minus 1/8 inch.
Base width_____plus or minus 1/16 inch.
Wing width_____plus or minus 1/16 inch.
Thickness _____plus or minus 1/32 inch.

3.3.2 *Class B, padding stock.*—The padding stock shall be 3 inches wide, and not less than 0.062 ± 0.002 inch thick. This stock shall be suitable for filling in worn (low) spots under camelback.

3.3.3 *Class C, filler-strip stock.*—The filler-strip stock shall be 2½ inches wide, 1/8 inch thick at the center-line, and tapered on each side to a thin edge. This stock shall be suitable for filling around the complete circumference of the tire being repaired, to insure proper outside diameter after application of the camelback.

3.4 Type III, patches and patch materials.

3.4.1 *Class A, tire patches.* — The tire patches shall be furnished in the uncured, semicured, or cured condition and of the designations (sizes) as specified (see 6.1), and shall be of the ply construction and dimensions shown in table III. Cured and semicured patches may be flat or dome-shaped, when 6-ply or smaller constructions are required; and shall be dome-shaped only (contoured both radially and longitudinally) for constructions of more than 6-ply. Uncured patches of all ply constructions shall be flat in shape. Each patch, uncured, semicured, or cured, shall consist of plies of cord fabric, cover, facing, and markings, as specified hereinafter.

3.4.1.1 *Cord fabric.*—The cord fabric shall be new rayon cord, rubber-treated on each side. The breaking strength of the processed fabric shall be not less than 500 pounds per inch of width; or not less than 750 pounds per inch of width when 2,200-denier rayon cord is furnished for the 4-ply and 6-ply patches described in 3.4.1.2. (See 4.2.2.)

3.4.1.2 *Ply constructions.*—The number of plies of fabric to be used shall be as specified in table III, except that fabric woven of 2,200-denier rayon cord constructed with six or more plies may be furnished with two less plies than required in table III. Each patch shall consist of an even number of plies,

TABLE III.—*Type III, class A, tire patches*

Patch designation	Size of injury	Number of plies in patch	Minimum size	
			Plies	Patch (over-all)
	Inches		*Inches*	*Inches*
2-0-N	Up to ½	2	¾ x 2½	3 x 3
2-2-4	½ to 2	2	2½ x 6	6½ x 6½
4-4-4	2 to 4	4	4½ x 9	11½ x 11½
4-4-6			5¼ x 11	
4-2-6	½ to 2	4	2½ x 6	8½ x 8½
			3¼ x 8	
6-2-8	½ to 2	6	2½ x 6	10½ x 10½
			3¼ x 8	
			4 x 10	
6-4-8	2 to 4	6	4½ x 9	13½ x 13½
			5¼ x 11	
			6 x 13	
8-2-10	½ to 2	8	2½ x 6	12½ x 12½
			3¼ x 8	
			4 x 10	
			4¾ x 12	
8-4-10	2 to 4	8	4½ x 9	15½ x 15½
8-4-12			5¼ x 11	
			6 x 13	
			6¾ x 15	
8-6-10	4 to 6	8	6½ x 12	18½ x 18½
			7¼ x 14	
			8 x 16	
			8¾ x 18	
10-4-12	2 to 4	10	4½ x 9	17½ x 17½
10-4-14			5¼ x 11	
			6 x 13	
			6¾ x 15	
			7½ x 17	
10-6-12	4 to 6	10	6½ x 12	20½ x 20½
10-6-14			7¼ x 14	
			8 x 16	
			8¾ x 18	
			9½ x 20	
12-6-16	4 to 6	12	6½ x 12	22½ x 22½
			7¼ x 14	
			8 x 16	
			8¾ x 18	
			9½ x 20	
			10¼ x 22	

which shall be assembled in a criss-cross manner, so that each ply will be placed at right angles to each adjacent ply.

3.4.1.3 *Cover.*—All tire patches shall have gum stripping of not less than a 0.020-inch thickness placed over the ends of the largest plies. This stripping shall extend not less than ¼ inch beyond the cord end.

3.4.1.4 *Facing.*—The facing for tire patches shall be cushion face gum, of not less than a 0.015-inch thickness, and extending not less than ¼ inch beyond the wing ends of patches. Processing or application of the facing shall conform to the following:

3.4.1.4.1 *Cured or semicured patches.*—Inside corners of facing may be folded back upon themselves, but shall not overlap cured material at any point in cured or semicured patches. When inside corners are trimmed the facing (cushion-face gum) shall extend not less than ¼ inch beyond wing edges.

3.4.1.4.2 *Cured patches.* — Underside of each cured patch shall be buffed and cemented before the cushion-face gum is applied. The patch shall be cemented with vulcanizing cement (see 3.5.1), and rolled under pressure after application of the facing, to exclude air between patch and cushion face gum.

3.4.1.5 *Cord and size markings.* — Each patch described in 3.4.1 shall have a mark to show direction of the cords in the first ply, and shall also carry a size designation made up of three figures, as follows:

First figure: Number of plies in patch.

Second figure: Maximum size (inches) of injury.

Third figure: Ply rating (number of plies in tire).

For example, the designation "4–2–6" would mean a 4-ply patch, for 2-inch maximum injury, in a tire of 6-ply rating.

3.4.2 *Class B, tube-repair materials.*—The tube-repair materials shall be 18 to 20 inches wide or when specified (6.1), 6 inches wide, and shall be furnished in the following styles, as specified:

3.4.2.1 *Style 1, combination-tube-repair gum.* — The combination-tube-repair gum shall have cured back, uncured face, shall have a natural-rubber content of not less than 1.15 pounds per square yard, and shall be 0.045 ± 0.002 inch in thickness. The style 1 gum shall be suitable for use in applying cold patches to inner tubes (see 3.5.2), and for inside reinforcements under vulcanized tube repairs.

3.4.2.2 *Style 2, tube-repair gum (vulcanizing).*—The tube-repair gum (vulcanizing) shall be uncured, shall have a natural-rubber content of not less than 60.0 percent by volume, and shall be 0.062 ± 0.002 inch in thickness. The style 2 gum shall be suitable for making vulcanized repairs on inner tubes.

3.5 Type IV, processing materials.

3.5.1 *Class A, vulcanizing cement.* — The vulcanizing cement shall contain not less than 0.50 pound of natural rubber per gallon, with no reclaimed rubber, and with solvent as called for in 3.5.4. This cement shall be capable of being vulcanized, and shall be suitable for use in recapping, repairing, and retreading tires, in sectional-tire repairs, and in inner-tube repairs.

3.5.2 *Class B, cold-process cement.* — The cold-process cement shall contain not less than 0.15 pound of natural rubber per gallon, with no reclaimed rubber, and with solvent as called for in 3.5.4. This cement shall be suitable for repairing inner tubes by the use of combination-tube-repair gum.

3.5.3 *Class C, technical talcum (soapstone).* —The technical talcum (soapstone) shall be commercial standard, in powder form, and shall be suitable for general use in tire-repair shops.

3.5.4 *Class D, rubber solvent.*—The rubber solvent shall consist entirely of petroleum distillate, and shall be water-clear, free from foreign material, acid, water, or antiknock materials. When subjected to distillation in accordance with the applicable method of Federal Specification VV–L–791, the solvent shall show an initial boiling point (I.P.) of 100° to 140° F., and an end point (E.P.) of 250° to 300° F., with no oily residue.

3.5.5 *Class E, curing-bag paint.*—The curing-bag paint shall be commercial standard, and shall be suitable for use on curing bags (see 3.6.2) to prevent adherence (sticking) between the bag and the section being repaired.

3.5.6 *Class F, tire-mold lubricant.* — The tire-mold lubricant shall consist of a wetting agent, in powder form, of sulfated ester of higher fatty alcohol. A solution consisting of 2 ounces of lubricant in 1 gallon of water shall be suitable when used to paint the inside of tire molds before each cure, to prevent sticking between the mold and the tire being repaired, and to produce clean-cut tread designs.

3.5.7 *Class G, rubber-marking crayons.*—The rubber-marking crayons shall be yellow in color, waterproof, approximately 4 inches long, hexagonal in shape, and ½ inch wide. The crayons shall be suitable for marking tires or inner tubes being repaired.

3.5.8 *Class H, oil-base soap.*—The oil-base soap shall be furnished in paste form and shall be suitable for coating (lubricating) pneumatic tires and inner tubes for mounting at ambient temperatures down to minus 65° F. Unless otherwise specified, the soap shall conform to Federal Specification P–S–598, type I (paste), except that the maximum moisture content may be 60 percent and the minimum glycerol content, 3 percent.

3.6 Type V, curing equipment.

3.6.1 *Class A, curing tubes.*—The curing tubes shall be of the road-rim type, shall conform to basic curing-tube dimensions, and shall conform to the dimensions shown in table IV for the tire sizes specified (see 6.1). Compound of these tubes shall be natural rubber or GR–I synthetic rubber, except that reclaimed rubber may be used in the proportions desired by the manufacturer. When made of synthetic rubber, each tube shall carry a circumferential stripe not less than ⅛ inch wide, light blue in color (for GR–I material), in addition to the markings called for in 3.6.3.

TABLE IV.—*Type V, class A, curing tubes*

Tire size	Dimensions	
	Periphery, minimum	Wall thickness, minimum
Inches	*Inches*	*Inch*
6.00-16	16.0	8/32
7.00-20	16.5	8/32
7.50-16	18.0	8/32
7.50-20	19.5	8/32
8.25-20	20.5	8/32
9.00-16	22.0	8/32
9.00-20	22.0	8/32
10.00-20	24.0	8/32
11.00-18	26.0	8/32
11.00-20	26.0	8/32
12.00-20	28.0	8/32

3.6.2 *Class B, curing bags.*—The curing bags shall be of sectional steam-and-air design, of the dimensions shown in table V for the tire sizes specified (see 6.1), and shall be identical in every respect with those regularly furnished by the manufacturer to tire-repair shops for making sectional tire repairs.

3.6.3 *Classes A and B, marking.* — Each piece of curing equipment (tubes and bags) shall be plainly and permanently marked with the name of the manufacturer, brand name, and the size of the designated tire.

3.7 Workmanship. — The workmanship shall be first class in every respect, and shall be such that the materials, equipment, and related products will withstand satisfactorily the service for which they are intended.

TABLE V.—*Type V, class B, curing bags*

Tire size	Toe-to-toe periphery		Crown length	
	Minimum	Maximum	Minimum	Maximum
Inches	*Inches*	*Inches*	*Inches*	*Inches*
4.00-18	9.5	10.0	12	14
4.50-18	10.5	12.0	13	15
5.50-16-18	13.5	15.0	15	16
6.00-16	14.0	15.5	15	17
30 x 5	14.0	15.5	17	21
6.00-20	14.0	15.5	17	21
32 x 6	16.5	19.0	19	23
6.50-16	15.0	16.5	15	17
6.50-20	15.0	16.5	17	22
7.00-15-16	16.5	18.0	16	17
7.00-20	16.5	19.0	19	23
7.50-15-16	17.5	19.0	17	23
7.50-20	18.0	20.5	21	26
8.25-20	19.5	22.0	22	25
9.00-16-20	22.0	24.5	24	28
10.00-20-22	24.0	26.5	24	30
11.00-18-20	25.5	28.0	24	29
12.00-20	26.5	29.0	26	32
13.00-20-24	29.5	32.0	28	33
14.00-20-24	33.0	35.5	26	32

4. SAMPLING, INSPECTION, AND TEST PROCEDURES

4.1 Sampling.—Unless otherwise specified, samples of purchases made under this specification shall be taken immediately upon receipt at point of delivery.

4.1.1 *Materials.*—One sheet, piece, or container of material (see 3.2 to 3.5.8, inclusive) shall be taken at random from each 100 sheets, pieces, or containers of each type, class, and style submitted for delivery at one time.

4.1.2 *Equipment.* — Each item of equipment (curing tubes and curing bags) (see 3.6) shall be subject to inspection and tests, to determine compliance with the requirements of this specification.

4.2 Inspection and tests. — Unless otherwise specified herein, inspection and tests of the following materials shall be made in accordance with the applicable provisions of the specification indicated:

Sheet or piece materials: Federal Specification ZZ–R–601.

Fabric materials: Federal Specification CCC–T–191.

Cold-process cement: Federal Specification ZZ–C–191, type II.

Rubber solvent: Federal Specification VV–L–791.

Oil-base soap: Federal Specification P–S–598.

4.2.1 *Vulcanizing test.* — A sheet having a total area of 1 square foot shall be taken as a sample of the materials called for in 3.2 and 3.3. This sample shall be vulcanized at a temperature of 260° F., or equivalent, for the curing times indicated in table VI.

TABLE VI.

Type	Class	Material	Curing time, minutes
I	A	Tread-repair stock	40
I	B	Repair-cushion stock	20
I	C	Repair-cord stock	20
II	A	Camelback (grade A)	60
II	B	Padding stock	20
II	C	Filler-strip stock	40
III	B	Tube-repair gums	5

4.2.2 *Cord-strength test.*—A cord-strength test shall be made by removing a single cord from a sample of type I, class C, repair-cord stock (3.2.3), or of the cord fabric used for type III, class A, tire patches (3.4.1.1) determining its bone-dry tensile strength, and multiplying this figure by the actual cord count (number of cords per inch of width) of the material under test.

5. PREPARATION FOR DELIVERY

5.1 Packaging.

5.1.1 *Tire-repair materials.* — Tire-repair materials (type I, classes A, B, and C) shall

be furnished in unit rolls containing 10 pounds of the material; except that when specified (see 6.1), 25-pound unit rolls shall be furnished. The rolled material shall be wound on a paper or chipboard shell of not less than 1¼ inches inside diameter and then packed in a container made of fiberboard, with a minimum Mullen test of 125 pounds for the 10-pound roll, and of 175 pounds for the 25-pound roll.

5.1.2 *Tire-capping materials.*

5.1.2.1 *Camelback (grade A).* — Type II, class A camelback shall be supplied in rolls of length and weight conforming to manufacturer's regular commercial practice. Each roll shall be wound on a substantial paper or chipboard shell, covered with a material which will not adhere to the surface of the camelback in contact with the shell. Inside diameter of the shell shall be not less than 4 inches; and its length shall be equal to or not more than ⅛ inch less than the width of the container to be used. The roll (camelback on shell) shall be placed in an interior container, which shall be adequately sealed. Fiberboard shall be used for the container and shall have a minimum Mullen test of 200 pounds.

5.1.2.2 *Padding stock.*—The type II, class B, padding stock shall be furnished in unit rolls containing 25 pounds of the material, and shall be wound on a shell and packed in a container in accordance with 5.1.1.

5.1.2.3 *Filler-strip stock.* — The type II, class C, filler-strip stock shall be furnished and packaged in the same manner as the padding stock. (See 5.1.2.2.)

5.1.3 *Patches.*

5.1.3.1 *Tire patches.*—The type III, class A, tire patches shall be packaged either 6 or 12 to an interior container, in such a manner as to prevent any one patch from sticking to another.

5.1.3.2 *Tube-patch materials.* — The type III, class B, styles 1 and 2 tube-patch materials shall be furnished in 1- or 5-pound rolls, for the 6-inch or 18-20-inch widths, respectively. These gums shall be wound on shells and packed in containers in accordance with 5.1.1.

5.1.4 *Processing materials.*

5.1.4.1 *Vulcanizing cement.*—The type IV, class A cement shall be furnished in 5-gallon containers, or when specified (see 6.1) in drums holding approximately 50 gallons. The containers and drums shall conform to the requirements of the Interstate Commerce Commission.

5.1.4.2 *Cold-process cement.*—The type IV, class B cement shall be furnished in 5-gallon containers conforming to the requirements of the Interstate Commerce Commission.

5.1.4.3 *Technical talcum (soapstone).* — The type IV, class C talcum shall be furnished in 5-pound bags or other suitable containers.

5.1.4.4 *Rubber solvent.*—The type IV, class D, rubber solvent shall be furnished in 25-gallon containers, or when specified (see 6.1) in drums holding approximately 50 gallons.

5.1.4.5 *Curing-bag paint.* — The type IV, class E, curing-bag paint shall be furnished in 5-gallon containers.

5.1.4.6 *Tire-mold lubricant.*—The type IV, Class F, tire-mold lubricant shall be furnished in 1-pound bags, suitably protected against moisture.

5.1.4.7 *Rubber-marking crayons.*—The type IV, class G, rubber-marking crayons shall be furnished in cartons containing 12 boxes, with 12 sticks in each box.

5.1.4.8 *Oil-base soap.*—The type IV, class H, oil-base soap shall be furnished in 1-gallon open top cans, each of approximately 8 pounds gross weight; or when specified (6.1) in 5-gallon clincher-type open pails, each of approximately 50 pounds gross weight.

5.1.5 *Curing equipment.*

5.1.5.1 *Curing tubes.*—Each type V, class A, curing tube shall be individually packaged in a double wrap of kraft paper, or in a single wrap of sisal material.

5.1.5.2 *Curing bags.*—Each type V, class B, curing bag shall be individually packaged in folding or set-up boxes.

5.2 Packing. — Unless otherwise specified (see 6.1), the subject commodities, packaged as specified in 5.1, shall be packed in substantial commercial containers of the type, size, and kind commonly used for the purpose, so constructed as to permit acceptance by carrier for transportation at the lowest applicable rate, and to afford maximum protection from normal hazards of transportation. No further packing (additional shipping container) shall be required for 50-gallon drums. Gross weight of wood boxes shall not exceed approximately 200 pounds; of fiberboard boxes, approximately 70 pounds. (See 5.1.4.1 and 5.1.4.4, or for curing tubes enclosed in wraps, 5.1.5.1.)

5.3 Marking. — Unless otherwise specified (see 6.1), shipping containers shall be marked with the name of the material, equipment, or related product, the size, and the quantity contained therein, as defined by the contract or purchase order under which the shipment is made, the name of the contractor, and the number of the contract or purchase order.

6. NOTES

6.1 Ordering data. — Purchasers should exercise any desired options offered herein (see 3.5.8, 4.1, 4.2, 5.2, 5.3, 7.2.4, and 7.3.5) and should include the following information in invitations for bids, contracts, or purchase orders, as applicable:

(a) Title, identifying symbol, and date of this specification.

(b) Type, class, and style of product (see 1.2.1).

(c) Style, width (crown, base, and wing) and thickness of camelback, and applicable tire sizes (see 3.3.1).

(d) Condition (uncured, semicured, or cured) and designation (size) of tire patches required (see 3.4.1).

(e) Style of tube-patch material required, and when rolls 6 inches wide are to be furnished (see 3.4.2).

(f) Tire sizes for which curing tubes are required (see 3.6.1).

(g) Tire sizes for which curing bags are required (see 3.6.2).

(h) When sampling, inspection, and test(s) are to be made at point of manufacture (see 4.1).

(i) When tire-repair materials (type I) are required in 25-pound rolls (see 5.1.1).

(j) When vulcanizing cement (type IV, class A) is to be furnished in 50-gallon drums (see 5.1.4.1).

(k) When rubber solvent (type IV, class D) is to be furnished in 50-gallon drums (see 5.1.4.4).

(l) When oil-base soap (type IV, class H) is to be furnished in 5-gallon clincher-type open pails (see 5.1.4.8).

(m) Methods of packing, when other than domestic shipment is required (see 5.2).

(n) Any special or technical marking required (see 5.3 and 7.4.3.1).

(o) Whether subject commodity is to be packed and shipping containers marked for domestic or overseas shipment (see 7.3.4).

6.2 Allocation Order R–1.—It is the intent of this specification that all materials, equipment, and products purchased and furnished under this specification conform in all respects to Rubber Order R–1 issued by the Bureau of Foreign and Domestic Commerce of the U. S. Department of Commerce.

6.3 It is believed that this specification adequately describes the characteristics necessary to secure the desired material, and that normally no samples will be necessary prior to award to determine compliance with this specification. If, for any particular purpose, samples with bids are necessary, they should be specifically asked for in the invitation for bids, and the particular purpose to be served by the bid samples should be definitely stated, the specification to apply in all other respects.

6.4 Federal specifications cover only the types, classes, grades, sizes, etc., of commodities as generally purchased by the Federal Government, and are not intended to include all the types, etc., which are commercially available.

Patent notice.—When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded, by implication or otherwise, as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

7. DEPARTMENTAL REQUIREMENTS

7.1 The following specifications and other publications, of the issues in effect on date of invitation for bids, and special requirements, form a part of this specification for purchases made under this specification by the respective departments.

7.2 **Army.**

7.2.1 *Applicable specifications.*

U. S. Army Specifications:

20–128—Tires and Accessory Equipment, Combat.

100–2 —Standard Specification for Marking Shipments by Contractors.

TABLE VII.—*Type II, class A, camelback*

Tire size	Matrix number	Die sizes[1]			Curing time, minutes[2]		
		Top cap	Full cap	Retread	Top cap	Full cap	Retread
6.00-16	F-84-X	42-46-14	42-66-14		90	90	
6.00-16	F-2-111-N.D.		52-76-14	50-74-16		90	100
6.50-15	F-83-X	46-52-14	46-72-14		90	90	
7.00-15	F-84-X	52-56-14	52-76-14		100	100	
7.00-15	F-84-X	46-52-14	46-72-14		100	100	
7.00-20	F-224-N.D.		70-100-16	66-96-20		100	120
7.50-15	F-85-X	52-56-14	52-76-14		100	100	
7.50-16	F-92-X	56-62-16	56-82-16		100	100	
7.50-16	F-221-N.D.		70-100-16	66-96-20		100	120
7.50-20	F-2A-225-N.D.		70-100-16	66-96-20		100	120
8.25-20	F-2A-226-N.C.		70-100-16	66-96-20		100	120
9.00-16	F-2A-224-1-N.D.		80-114-18	76-112-22		110	130
9.00-20	F-2A-332-N.D.		80-114-18	76-112-22		110	130
10.00-20	M-554		84-130-18			120	140
11.00-20	M-558		94-140-20			130	150

[1] The die sizes signify the crown and base widths and the thickness; for example, "42-46-14" is 4⅞ inches crown width, 4⅝ inches base width, and 1$^{14}/_{32}$-inch thick.

[2] Curing times shown in the table are for curing at 293°F. mold temperature, or 45-p.s.i. steam-supply pressure, and will be increased by 10 minutes for each ply of 1/16-inch padding stock used (see 3.3.2.). Fill-ins of less than ⅜ inch can be cured with the retread, with no increase in time required. All filled-in injuries of ⅜-inch-or-greater depth must be pre-cured in a sectional mold.

(Copies of specifications required for Army purchases may be obtained upon application to the procuring agency. Both the title and identifying symbol or number should be stipulated when requesting copies.)

7.2.2 *Type II, class A, camelback.*—Style 1, bevel-stock camelback shall be furnished for top recapping; and style 2, wing-stock camelback for full capping and retreading, as indicated under "Die sizes" in table VII. All capping materials shall be suitable for use with the matrices and in accordance with the curing times specified in table VII.

7.2.3 *Type V, class B, curing bags.*—Curing bags for reconditioning of the combat tires covered by U. S. Army Specification 20–128 shall be furnished, when specified in the invitation for bids, contract, or purchase order, in accordance with table VIII.

TABLE VIII.—*Type V, class B, curing bags for combat tires*

Combat tire size	Dimensions of curing bags			
	Toe-to-toe periphery		Length	
	Minimum	Maximum	Minimum	Maximum
Inches	*Inches*	*Inches*	*Inches*	*Inches*
6.00-16	13.0	13.5	15	18
6.00 20	12.0	12.5	15	18
7.50-16	15.5	16.0	16	20
7.50-20 (Quarter circle)	16.0	17.0	20	24
8.25-20	17.5	18.0	22	26
9.00-16	19.4	20.4	19	23
9.00-20	19.5	20.3	22	26
10.00-20-22	20.0	21.0	22	26
11.00-20	22.5	23.5	27	31
12.00-20	23.2	24.0	27	31
14.00-20	27.0	28.0	30	34
14.00-24	27.0	28.0	30	34

7.2.4 *Marking of shipping containers.*—Unless otherwise specified in the invitation for bids, contract, or purchase order, each shipping container shall be marked in accordance with the applicable requirements of U. S. Army Specification 100–2. Each container shall also be suitably marked on the top or other conspicuous place, with the month and year its contents were manufactured, and with the instructions "STORE IN COOL DRY PLACE."

7.3 Navy.

7.3.1 *Applicable specifications and other publications.*

Federal Specifications:

NN–B–591 —Boxes; Wood-Cleated-Fiberboard.

NN–B–601 —Boxes; Wood-Cleated-Plywood, for Domestic Shipment.

NN–B–621 —Boxes; Wood, Nailed and Lock-Corner.

NN–B–631 —Boxes; Wood, Wirebound, for Domestic Shipment.

LLL–B–631—Boxes; Fiber, Corrugated (for Domestic Shipment).

LLL–B–636—Boxes; Fiber, Solid (for Domestic Shipment).

Military Specifications:

JAN–P–105—Packaging and Packing for Overseas Shipment—Boxes, Wood, Cleated, Plywood.

JAN–P–106—Packaging and Packing for Overseas Shipment—Boxes; Wood, Nailed.

JAN–B–107—Boxes, Wood, Wirebound (Overseas Type).

JAN–P–108—Packaging and Packing for Overseas Shipment—Boxes, Fiberboard (V-Board and W-Board), Exterior and Interior.

JAN–P–125—Packaging and Packing for Overseas Shipment—Barrier-Materials, Waterproof, Flexible.

JAN-P-138—Packaging and Packing for Overseas Shipment—Boxes, Wood, Fiberboard-Lined.

JAN-P-140—Packaging and Packing for Overseas Shipment—Adhesives, Water-Resistant, Case-Liner.

Navy Department Specification:

General Specifications for Inspection of Material.

Bureau of Supplies and Accounts Publication:

Navy Shipment Marking Handbook.

(Copies of Federal and Military specifications required for Navy purchases, Navy Department specifications, and the Navy Shipment Marking Handbook may be obtained without cost upon application to the Bureau of Supplies and Accounts, Navy Department, Washington 25, D. C., except that activities of the Armed Forces should make application to the Commanding Officer, Naval Supply Center, Norfolk 11, Virginia. Both the title and identifying symbol or number should be stipulated when requesting copies of specifications.)

7.3.2 *Packing.*

7.3.2.1 *For domestic shipment.*—The subject commodity, packaged as described in 5.1, shall be packed in substantial commercial containers of the type, size, and kind commonly used for the purpose, so constructed as to permit acceptance by carrier for transportation at the lowest applicable rate, and to afford maximum protection from the normal hazards of transportation. When wood-cleated fiberboard boxes, wood-cleated plywood boxes, nailed wood boxes, wirebound wood boxes, corrugated fiber boxes, or solid fiber boxes are used, they shall conform to the requirements of Federal Specifications NN-B-591, NN-B-601, NN-B-621, NN-B-631, LLL-B-631, and LLL-B-636, respectively. The gross weight of wood boxes shall not exceed approximately 200 pounds; of fiberboard boxes, approximately 70 pounds.

7.3.2.2 *For overseas shipment.*—The subject commodity, packaged as described in 5.1, shall be packaged in wood-cleated plywood boxes, nailed wood boxes, wirebound wood boxes, fiberboard boxes, or fiberboard-lined wood boxes conforming to the requirements of Military Specifications JAN-P-105, JAN-P-106, JAN-B-107, JAN-P-108, and JAN-P-138, respectively. Shipping containers shall be lined with a sealed waterproof bag, or its equivalent, made from material conforming to the requirements of Military Specification JAN-P-125. The seams and closures shall be sealed with water-resistant adhesive conforming to the requirements of Military Specification JAN-P-140. The gross weight of wood boxes shall not exceed approximately 200 pounds; of fiberboard boxes, approximately 70 pounds.

7.3.3 *Marking.*—In addition to any special marking required by the contract or order, marking of interior packages and shipping containers shall be in accordance with the requirements of the Navy Shipment Marking Handbook.

7.3.4 *Ordering data.* — Requests, requisitions, schedules, and contracts or orders should specify whether the subject commodity is to be packed and shipping containers marked for domestic or overseas shipment. (See 7.3.2 and 7.3.3.)

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7.3.5 *Marine Corps.*—As specified in the contract.

7.4 Air Force.

7.4.1 *Applicable specification.*

U. S. Army Specification:

94-40645—Marking; Exterior, Domestic and Export Shipment, by Contractors.

(Copies of specifications required for Air Force purchases may be obtained from the Commanding General, Air Matériel Command, Wright-Patterson Air Force Base, Dayton 1, Ohio.)

7.4.2 *Identification marking.*

7.4.2.1 *Curing tubes.* — Each curing tube shall be marked in a plain and permanent manner with the name of the item, type and class, manufacturer's part number, order number, specification number, and with the size of tire as designated in the invitation for bids or contract. The tube, if of synthetic rubber, shall also carry a circumferential stripe not less than ⅛ inch wide; color of the stripe shall be light blue (for GR–I material).

7.4.2.2 *Curing bags.* — Each curing bag shall be marked in a plain and permanent manner with the name of the item, type and class, manufacturer's part number, order number, specification number, and with the size of tire as designated in the invitation for bids or contract.

7.4.3 *Marking for shipment.*

7.4.3.1 *Interior packages.*—Each of the interior packages, when required, shall be durably and legibly marked with the following information in such a manner that the markings will not become damaged when the packages are opened. If no interior package is required, this information shall be durably and legibly marked on a suitable cloth tag and securely attached to the article:

Tire and Tube Reconditioning Materials and Equipment (Rubber and Related Products).

Type (the type applicable).

Manufacturer's part number.

Order number (Government).

Date of manufacture.

Quantity.

Manufacturer's name or trademark.

7.4.3.2 *Exterior containers.*—Each exterior shipping container shall be marked in accordance with U. S. Army Specification 94–40645.

This specification is a part of Section IV, Part 5, of the Federal Standard Stock Catalog.

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AMENDMENT—1
2 AUGUST 1951

FEDERAL SPECIFICATION

TIRE AND TUBE RECONDITIONING MATERIALS AND EQUIPMENT (RUBBER AND RELATED PRODUCTS)

This amendment, which forms a part of Federal Specification ZZ-T-416a, dated 13 December 1950, was approved on the above date by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

Page 6, paragraph *3.5.8,* line 8: Delete "type I" and substitute "type II".

This amendment is a part of Section IV, Part 5, of the Federal Standard Stock Catalog

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